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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/583,570

**Applicant(s)**

DESIMONE ET AL.

**Examiner**

JESSICA WORSHAM

**Art Unit**

1615

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 July 2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on \_\_\_\_; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 5) ☒ Claim(s) 1-23 and 25-135 is/are pending in the application.
- 5a) Of the above claim(s) 6-13, 28, 29, 32, 49-53 and 57-135 is/are withdrawn from consideration.
- 6) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 7) ☒ Claim(s) 1-5, 14-23, 25-27, 30, 31, 33-48 and 54-56 is/are rejected.
- 8) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 9) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 10) ☒ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-940)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 2/14/07, 9/7/07, 1/7/09, 9/27/10, 7/28/11
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_

### **Detailed Action**

#### **Information Disclosure Statement**

1. The information disclosure statements (IDS) submitted on February 14, 2007, September 7, 2007, January 7, 2009, September 27, 2010, and July 28, 2011 are acknowledged. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements have been considered by the examiner.

See attached copy of PTO-1449.

#### **Status**

2. Applicant's election of Group I (claims 1-23, 25-48, and 54-56) in the reply filed on July 28, 2011 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Applicant provisionally elects the following species which Group I (1-23, 25-48, and 54-56) reads on:

(1) Regarding claim 4 and the election of a patterned template or substrate, applicant elected perfluoropolyether. Therefore claims 6-13 are withdrawn as reading on non-elected patterned template and substrate.

(2) Regarding claim 16 and election of substrate, applicant elected a polymer material.

(3) Regarding claim 27 and election of a master template, applicant elected a template formed from a lithography process. Since naturally occurring template was not elected, claims 28-29 have been withdrawn as they depend from naturally occurring template.

(4) Regarding claim 31 and election of surface modification treatment, applicant elected chemical treatment. Since adsorption process was not elected, claim 32 has been withdrawn as being directed to a non-elected species.

(5) Regarding claim 35 and pharmaceutical agent, applicant elected drug.

(6) Regarding claim 46, applicant elected dissolution process as a harvesting collection process.

Claims 1-23 and 25-135 are pending in this case. Claims 72-217 are withdrawn. Claim 24 is cancelled. Claims 6-13, 28-29, 32, 49-53 and 57-135 are withdrawn as the species of these claims were not elected. Claims 1-5, 14-23, 25-27, 30-31, 33-48, and 54-56 are currently pending and examined on the merits within.

### **Specification Objections**

3. The disclosure is objected to because of the following informalities: The specification does not describe  $F_r$  for Figure 2D. Appropriate correction is required.

4. The disclosure is objected to because of the following informalities: The specification does not describe  $T_r$  for Figure 9C but instead describes T. It is assumed T is a typographical error and should read  $T_r$ . Appropriate correction is required.

**Claim Rejections – 35 U.S.C. § 112, First Paragraph**

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-5, 14-23, 25-27, 30, 31, 33-48 and 54-56 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the formation of specific particles, does not reasonably provide enablement for any particle. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. More specifically, the particles can be made from PEG-diacrylate (see Example 3.1, page 66), trimethylolpropane triacrylate (see Example 3.5, page 68), poly(lactic acid) (see Example 3.8, page 70), polypyrrole (see Example 3.11, page 73), titania (see Example 3.19, page 78), and silica (see Example 3.20, page 79).

The applicant's attention is drawn to *In re Wands*, 8 USPQ2d 1400 (CAFC1988) at 1404 where the court set forth eight factors to consider when assessing if a disclosure would have required undue experimentation. Citing *Ex parte Forman*, 230 USPQ 546 (BdApl's 1986) at 547 the court recited eight factors: (1) the nature of the invention; (2) the state of the prior art; (3) the relative skill of those in the art; (4) the predictability or unpredictability of the art; (5) the breadth of the claims; (6) the amount of direction or guidance presented; (7) the presence or absence of working examples; and (8) the quantity of experimentation necessary.

Nature of the invention: The claimed invention is a method of forming particles using a liquid material and a patterned template having a plurality of recessed areas.

The state of the prior art: There are no methods wherein particles can be formed from a pure liquid. There must be something in the liquid material capable of forming a solid other than liquid itself.

The relative skill of those in the art: The relative skill of those in the mechanical development, pharmaceutical development, and medical treatment arts is high, requiring advanced education and training.

The predictability or unpredictability of the art: The instant claimed invention is highly **unpredictable** since one skilled in the art would recognize the breadth of the instant claims encompass formation of particles by disposing of a liquid material on a patterned template surface or a plurality of recessed areas. However, the claim as written reads on any liquid material which includes an immense amount of materials including water. Therefore, narrowing down the scope to those actually used in the example lessens the unpredictability of the method. However, it is still unpredictable how a liquid material without any other components involved form a solid particle using only a patterned template. The liquid must be composed of other components to form a solid particle.

The breadth of the claims: The instant claims are deemed very broad since these claims read on any type of liquid known, including water.

The amount of direction or guidance presented, and the presence or absence of working examples: It has been established that “the amount of guidance or direction needed to enable the invention is inversely related to the amount of knowledge in the state of the art as well as the predictability in the art.” *In re Fisher*, 427 F.2d 833, 839 166 USPQ 18, 24 (CCPA 1970). There is minimal discussion in the specification that would indicate that the claimed invention forms all types of particles.

The quantity of experimentation necessary: Given that the instant claims encompass formation of particles using any liquid There is no guidance provided as to a specific protocol to be utilized in order to show the efficacy of the presently claimed active ingredients for preventing the above claimed conditions, thereby presenting an undue burden of unpredictable experimentation necessary to practice the claimed invention.

*Genentech*, 108 F.3d at 1366, states, “a patent is not a hunting license. It is not a reward for search, but compensation for its successful conclusion” and “patent protection is granted in return for an enabling disclosure of an invention, not for vague intimations of general ideas that may or may not be workable.”

Therefore, in view of the Wands factors as discussed above, particularly the unpredictability of the art and the breadth of the claims, Applicants fail to provide information sufficient to practice the claimed invention for a method of making particles using a liquid.

**Claim Rejections – 35 U.S.C. § 112, Second Paragraph**

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-5, 14-23, 25-27, 30, 31, 33-48 and 54-56 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrase “*affinity for the particles*” is not defined by the claim nor does the specification provide a standard for ascertaining the requisite metes and bounds, thus one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Claims 2-5, 14-23, 25-27, 30, 31, 33-48 and 54-56 are included in this rejection because they depend from the rejected claim and do not cure the defect.

8. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrase “*essentially free of a scum layer*” is not defined by the claim nor does the specification provide a standard for ascertaining the requisite metes and bounds, thus one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Claims 2-5, 14-23, 25-27, 30, 31, 33-48 and 54-56 are included in this rejection because they depend from the rejected claim and do not cure the defect.

9. Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the



invention. Claim 5 is directed to a perfluoropolyether wherein X comprises an end capping group. This group is not defined in the specification; therefore it is not known what is meant by end capping group.

10. Claims 18-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrase “*plurality of recessed areas comprises a plurality of cavities*” is not defined by the claim nor does the specification provide a standard for ascertaining the requisite metes and bounds, thus one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Claims 19-23 are included in this rejection because they depend from the rejected claim and do not cure the defect.

11. Claims 19-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrase “*plurality of structural features*” is not defined by the claim nor does the specification provide a standard for ascertaining the requisite metes and bounds, thus one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Claims 20-23 are included in this rejection because they depend from the rejected claim and do not cure the defect.

12. Claims 30 and 31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant

regards as the invention. The phrase “*surface modification step*” is not defined by the claim nor does the specification provide a standard for ascertaining the requisite metes and bounds, thus one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Claim 31 is included in this rejection because it depends from the rejected claim and does not cure the defect.

13. Claim 31 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrase “*chemical treatment*” is not defined by the claim nor does the specification provide a standard for ascertaining the requisite metes and bounds, thus one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

14. Claim 40 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrase “*drawing an implement across the layer*” is not defined by the claim nor does the specification provide a standard for ascertaining the requisite metes and bounds, thus one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

15. Claim 42 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrase “*wherein the treating of the liquid material comprises a process*”

*selected from the group consisting of a thermal process, a photochemical process, and a chemical process*" is not defined by the claim nor does the specification provide a standard for ascertaining the requisite metes and bounds, thus one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

16. Claims 47 and 48 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrase "*batch process, semi-batch process, and continuous batch process*" are not defined by the claim nor does the specification provide a standard for ascertaining the requisite metes and bounds, thus one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. In the art, continuous processes are not generally deemed batch processes, therefore without further explanation it is unknown what continuous batch process means versus semi-batch process.

#### **Claim Rejections – 35 U.S.C. § 103**

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various

claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

**18. Claims 1-3, 14-17, and 39-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hansford et al. (WO 2004/096896 A2).**

Regarding instant claims 1, 14-17, 42, and 47-48, Hansford et al. teach a method for creating polymer microparticles by applying a continuous layer of polymer to the contoured side of a stamp which has individual recesses (i.e., patterned template), applying compression means to transfer the polymer between individual recesses to said first substrate, applying heat, removing the stamp with the polymer and placing them on a second substrate, applying compression, heating, and removing the stamp, followed by dissolving excess material resulting in microparticles. See claim 20. Examples of the polymers used include polypropyl methacrylate, polylactic-co-glycolic acid, polycaprolactone, polymethyl methacrylate, or polystyrene. See claim 22.

Regarding instant claims 2 and 3, the stamp is a polydimethylsiloxane stamp. See claim 23.

Regarding instant claims 39-41, Hansford et al. teach various spreading methods such as micro-pillar and micro-well techniques to form geometrically uniform microparticles. In doing so, the stamp is dipped into a PPMA/acetone solution to form a continuous layer of PPMA on the

stamp (i.e., the liquid is spread across the patterned template). Then a glass slide is coated using a brush or cotton swab with PVA. The glass slide is then pressed against the stamp which removes a second volume of liquid material leaving a third volume of liquid material. See pages 6-12 for variations on this method.

Regarding instant claims 43-46, Hansford et al. teach a method of evaporating the solution applied to the stamp, compressing the stamp against a glass slide, heating, dissolution of sacrificial layer to release the microparticles into solution, followed by retrieving of the microparticles using a desiccator or filtration. See pages 8 and 9.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Hansford et al. in order to form microparticles because molding and patterning techniques using polymeric materials are well known in the art. The poly(lactic acid) as taught by the instant specification is structurally similar to polylactic-co-glycolic acid as taught by Hansford et al. The copolymer is a derivative of poly(lactic acid). Therefore it would have been obvious to replace one polymer with the other to achieve similar results.

**19. Claims 1 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hansford et al. (WO 2004/096896 A2) in view of Rothschild et al.**

The teachings of Hansford et al. are discussed above.

Hansford et al. do not teach a perfluoropolyether.

Regarding instant claim 4, Rothschild et al. teach that the chemical and physical properties of fluorine play a critical role in the development of advanced photolithography. In

particular fluoropolymers serve as pellicles, photoresists, and immersion liquids. See abstract. A key enabler of liquid immersion lithography is a liquid with low viscosity, low vapor pressure, and low toxicity. Examples of these liquids include perfluoropolyethers (PFPEs). See page 9, column 1, and paragraph 3.

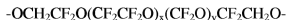
It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Hansford et al. and Rothschild et al. because the instantly claimed invention is to a method of forming particles using lithography wherein a template or substrate comprises perfluoropolyether. Since Rothschild et al. teach that PFPEs are preferential in lithography to obtain products of nano-scale size due to their properties of low viscosity, low vapor pressure, and low toxicity; it would have been obvious to use a preferential polymer as an enabler in the formation of the particles.

**20. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hansford et al. (WO 2004/096896 A2) in view of Rothschild et al. as applied to claims 1 and 4 above, and further in view of Meus et al. (WO 96/31548).**

The teachings of Hansford et al. and Rothschild et al. are described above.

Neither teach a perfluoropolyether with a particular backbone as described in claim 5.

Meus et al. teach cell growth substrate polymers comprising the following formula 1:



wherein x and y may be the same or different such that the molecular weight of the perfluoropolyether is in the range of from 242 to 400. See abstract.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Hansford et al., Rothschild et al., and Meus et al., because Rothschild et al. teach that perfluoropolyethers are enablers of photolithography. Therefore using the perfluoropolyether described in formula I would also enable photolithography because it falls within the class of perfluoropolyethers.

**21. Claims 1, 18-23, 30-31, and 33-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hansford et al. (WO 2004/096896 A2) in view of Shastri (U.S. Patent Application Publication No. 2004/0115239A1).**

The teachings of Hansford are disclosed above.

Hansford et al. do not teach structural features within cavities of the recessed areas.

Shastri teaches a layered device having a functional layer comprising particles of a very small size (about 5 nm to about 10 microns), whereby the particles have a predetermined geometric shape and are comprised of biologically active agents.

Shastri teaches a method of forming particles by inking a polydimethylsiloxane elastomer stamp with polystyrene latex particles and pressing the stamp and ink against a glass surface. See Example 7. The surface can also be chosen from a polymer such as a polytetrafluoroethylene. See claim 10. The stamp is then removed and the particles were transferred to the substrate. See Example 7.

Regarding instant claims 17-23, Shastri teaches a device having a surface and a functional layer associated with the surface, where the functional layer includes particles having a structure substituted with a functional group, wherein the functional group is adapted to modify

a property of the device, the device is sufficiently biocompatible for application to a multicellular organism and the particles have an average diameter of about 5 nm to about 10 microns. See Abstract; page 2, paragraphs 0017-0020 & 0028-0029.

The functionalized particles can be applied onto a wide range of surfaces such as a wire, a fiber, a filament, a coil, a tube, a sheet, a foil, cylinder, sphere, mesh, mat, tube, plate, a gel or hydrogel. Biologically active agents, drugs, biodegradable materials and the like are also disclosed. See page 4, paragraphs 0054-0059. The layers include a single layer or multiple layers. See page 4, paragraph 0062. The layers can be combined or conjugated with cells, polynucleotides and/or pharmacologically active agents. See page 4, paragraph 0066. The particles have an average diameter of about 5 nm to about 10 microns and are substantially congruent particles. See page 4, paragraphs 0069-0071. In certain embodiments, the structure can be a polymer. See page 5, paragraph 0075. The particles can be the reaction product of an epoxy group, an acrylate, a methacrylate and derivatives thereof. See page 5, paragraphs 0078-0079. The particles can include various ceramic or metal particles. See page 7, paragraph 0112.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Hansford et al. and Shastri because Hansford et al. teach a method of actually forming the polymeric microparticles while Shastri further discuss the characteristics of microparticles formed using a lithography process. Since both Shastri and Hansford et al. teach methods of making microparticles using a lithography process, it would have been obvious that the features found in the products of Shastri could also be formed using the lithography steps of Hansford et al.



**22. Claims 1 and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hansford et al. (WO 2004/096896 A2) in view of Xia et al. (Science, 1996).**

The teachings of Hansford et al. are discussed above.

Hansford et al. do not teach a replica molding process to form the patterned template.

Regarding instant claims 25-27, Xia et al. teach a procedure for replica molding against an elastomeric master under mechanical compression wherein a liquid prepolymer reaction mixture of PDMS is cast against a rigid master whose surface has been patterned in an appropriate relief structure (by photolithography). After curing, cross-linked PDMS is peeled from the master, wherein its surface replicates the surface of the master. Polyurethane is then compressed against the PDMS which comprises the pattern. See page 347, paragraph 2.

With respect to claim 27, which recite product-by-process limitations, the Examiner notes “[E]ven though product-by-process claims are limited by and defined by the process; determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). Therefore it is only necessary to find a template as opposed to the template (product) formed by the lithography process.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine teachings of Hansford et al. with Xia et al. because Xia et al. teach replica molding which is a well-known process in formation of patterned templates, in this case a

polydimethylsiloxane template. The patterned template is then used to form nanoparticles as taught by Hansford et al. which uses a polydimethylsiloxane stamp. Xia et al. teach a successful and efficient way to pattern polydimethylsiloxane stamps, while Hansford et al. teach a successful and efficient way to use polydimethylsiloxane stamps in lithography. Therefore combining the two references into one multi-step process would also be successful and efficient.

**23. Claims 1, 38, and 54-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hansford et al. (WO 2004/096896 A2) in view of Anderson et al. (U.S. Patent No. 6,645,432 B1).**

The teachings of Hansford et al. are discussed above.

Hansford et al. do not teach interconnected structures.

Regarding instant claims 54-56, Anderson et al. teach microfluidic systems including three-dimensionally arrayed channel networks formed by photolithography. See title. A polymeric membrane is disclosed comprising interconnected channels. See column 3, lines 14-46.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Hansford et al. and Anderson et al. because both teach molding methods using stamps to make products. The products of both are three-dimensional geometric products. Adding the features of Anderson et al., such as interconnected structures in the polymeric membranes would have been an obvious modification of the polymeric microparticles as taught by Hansford et al.

**Conclusion**

24. No claims are allowed.
25. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JESSICA WORSHAM whose telephone number is 571-270-7434. The examiner can normally be reached on Monday - Thursday 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert A. Wax can be reached on 571-272-0623. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JESSICA WORSHAM/  
Examiner  
Art Unit 1615

/Robert A. Wax/  
Supervisory Patent Examiner  
Art Unit 1615